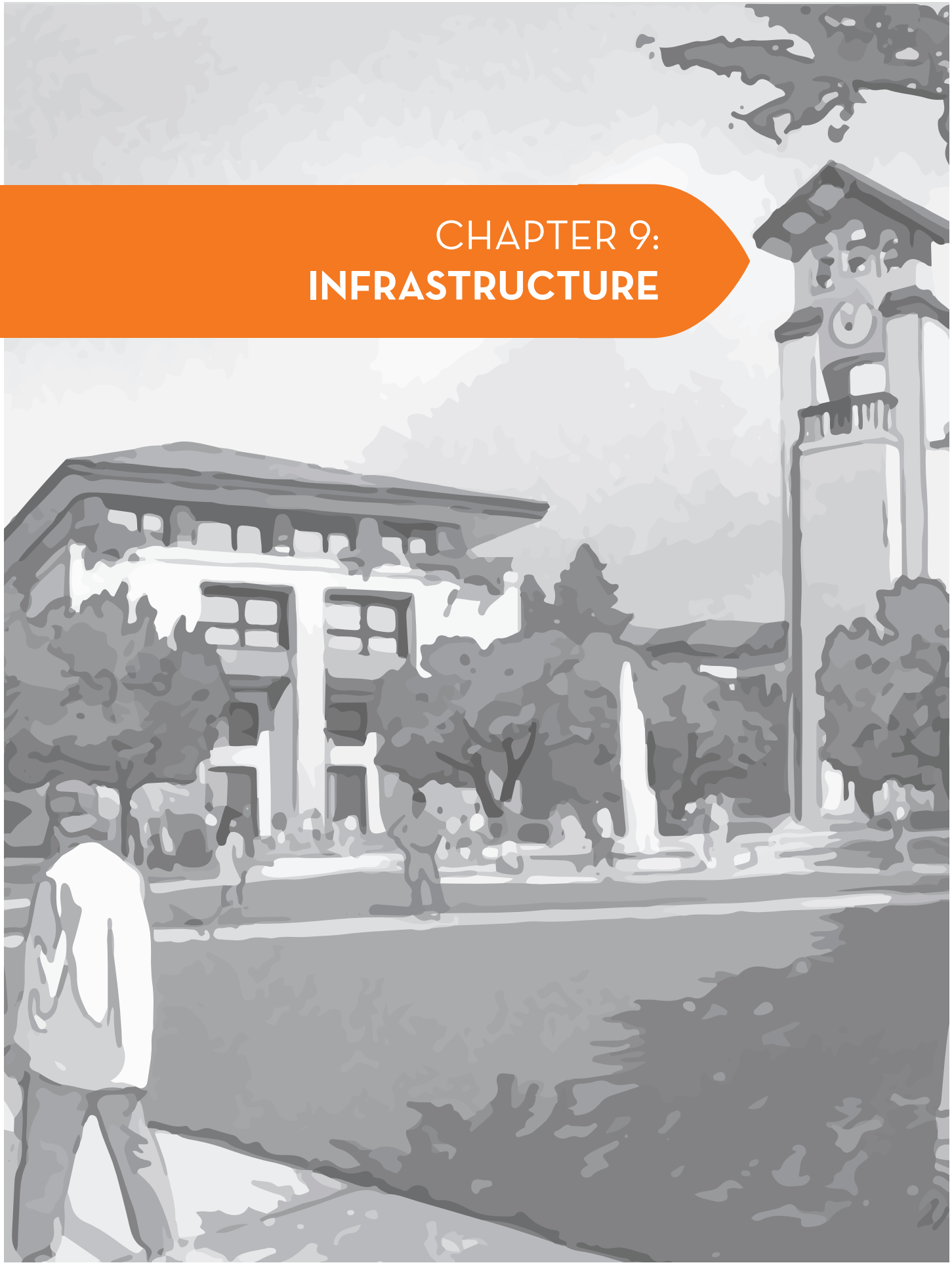
CHAPTER 9:
INFRASTRUCTURE



This chapter provides a brief summary of the planned infrastructure, utility systems, and public services necessary to support the UI District development. The PFFP and utility master plans, to be developed at a later date, will provide more detailed explanations of these backbone facilities and assign responsibilities for construction and financing as development proceeds.

Infrastructure, public utility systems, facilities, and services will be designed based upon the specific land uses, development intensity and phasing within the SPA. Facilities will be right-sized according to estimated demands and necessary distribution. The design and phasing of facilities may be modified during the tentative map and final map process with the City's approval in order to reflect the actual development and construction phasing.

9.1. Phasing

Development of the UI District will be completed in multiple phases to ensure construction of necessary infrastructure and amenities for each phase as the project progresses. Figure 9A: Conceptual Phasing Plan reflects development phasing that is dependent upon the market and the ability to secure academic and business innovation users.

The Conceptual Phasing Plan is non-sequential. It is recognized that sequential phasing is frequently inaccurate due to unforeseen market changes or regulatory constraints. Therefore, this SPA and the associated PFFP permits non-sequential phasing by imposing specific facilities requirements per the PFFP, for each phase to ensure that the UI District is adequately serviced and the City threshold standards are met. If necessary, infrastructure within the UI District boundary may be installed in overlapping or consecutive phases to be determined by project-specific requirements.

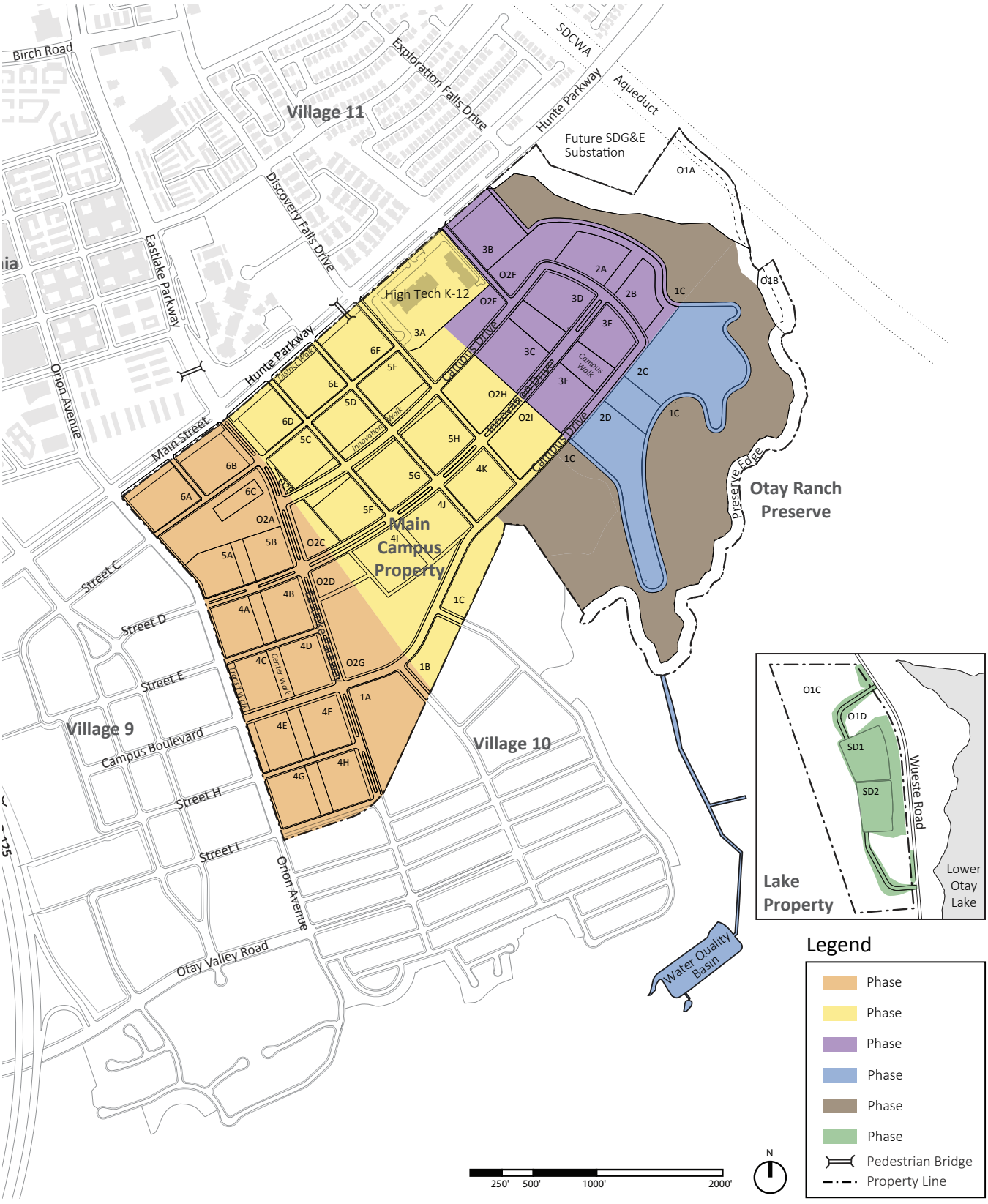


Figure 9A: Conceptual Phasing Plan

9.2. Water Supply and Master Plan

Water service and facilities for the UI District are addressed in the SPA Overview of Water Service ("Water Plan") prepared by Dexter Wilson Engineering Inc., dated July 2016. In conformance with the GDP and SPA requirements, the Water Plan demonstrates compliance with state and local agency requirements and the ability to serve the UI District. A summary of key points from the Water Plan are outlined below.

9.2.1. Water Supply

The City of Chula Vista formally requested that the Otay Water District prepare a water supply assessment report for the project. The Otay Water District Board of Directors formally approved the Water Supply Assessment and Verification Report, Otay Ranch UI District in October 2016.

The UI District is within the boundaries of the OWD, San Diego County Water Authority (SDCWA), and Metropolitan Water District of Southern California (MWD) for water service. Retail water service for the project is to be provided by the OWD. The SPA will require annexation into an OWD Improvement District in order to obtain water service. This annexation is an internal action by OWD and requires a written request and payment of processing fees.

The OWD has existing and planned facilities in the vicinity of the UI District and water service can be provided by expanding the existing system. In particular, water service will be provided by the 711 Pressure Zone (711 Zone) and the 624 Pressure Zone (624 Zone) within the Central Area System of the OWD.

9.2.2. Potable Water Demand

The UI District can receive potable water service by expanding the existing 624 Zone and 711 Zone water systems. The precise boundary between the 624 Zone and 711 Zone systems on-site will be determined as the on-site grading design progresses. Figure 9B: Conceptual Potable Water Plan provides the recommended on-site water facilities for the project. To provide preliminary sizing of water facilities in this study, the worst case fire flow scenario and the OWD Master Planning were taken into consideration. A Subarea Master Plan (SAMP) will be prepared prior to the approval

of the first final map for the project. In general, the project will be phased and must ensure that the OWD looping criteria is met during all phases of development. An analysis of available water supply will also be completed to assure that sufficient supplies are planned to be available as demand is generated by the project. A brief description of facilities by water service zone is provided below.

Development within the southern portion of UI District to elevations below approximately 474 feet will involve service from the 624 Zone. The 624 Zone will be formed by extending 624 Zone lines that are proposed within Otay Ranch Villages 9 and 10 and by constructing a 711/624 Zone pressure reducing station on-site. OWD has master planned a 16-inch backbone line in the 624 Zone that will convey flow through the project and southern Otay Ranch Villages. To provide adequate looping to development in the 624 Zone, two sources of 624 Zone water will be required. The first source will be the on-site 711/624 Zone pressure reducing station and the second source will be by connecting to the 624 Zone piping within Village 9 or Village 10. In the worst case, if no facilities have been constructed within Villages 9 or 10, the development will be required to construct the 711 Zone line and temporary pressure reducing station along the western property boundary to provide a redundant feed to development within the 624 Zone.

The majority of the UI District is within the 711 Zone for water service. Potable water service to this portion of the site can be served by connecting to the existing 711 Zone line in Hunte Parkway at multiple locations and constructing looped piping on-site. The majority of on-site piping is anticipated to be 12-inch to meet fire flow requirements. No off-site facilities are required to serve 711 Zone development south of Hunte Parkway, even if facilities in Village 9 and 10 have not yet been constructed.

The Lake Property area can be served by extending the 711 Zone system that is stubbed out within the Chula Vista Elite Athlete Training Center just to the north. This will include a short section of off-site piping. The Otay Water District has master planned a 20-inch 711 Zone extension from the Chula Vista Elite Athlete Training Center to the existing 30-inch 624 Zone Control Area/Otay Mesa Interconnect Pipeline. The Lake Property development will be required to construct a portion of this pipeline extension and then connect to this pipeline for service to the proposed development.

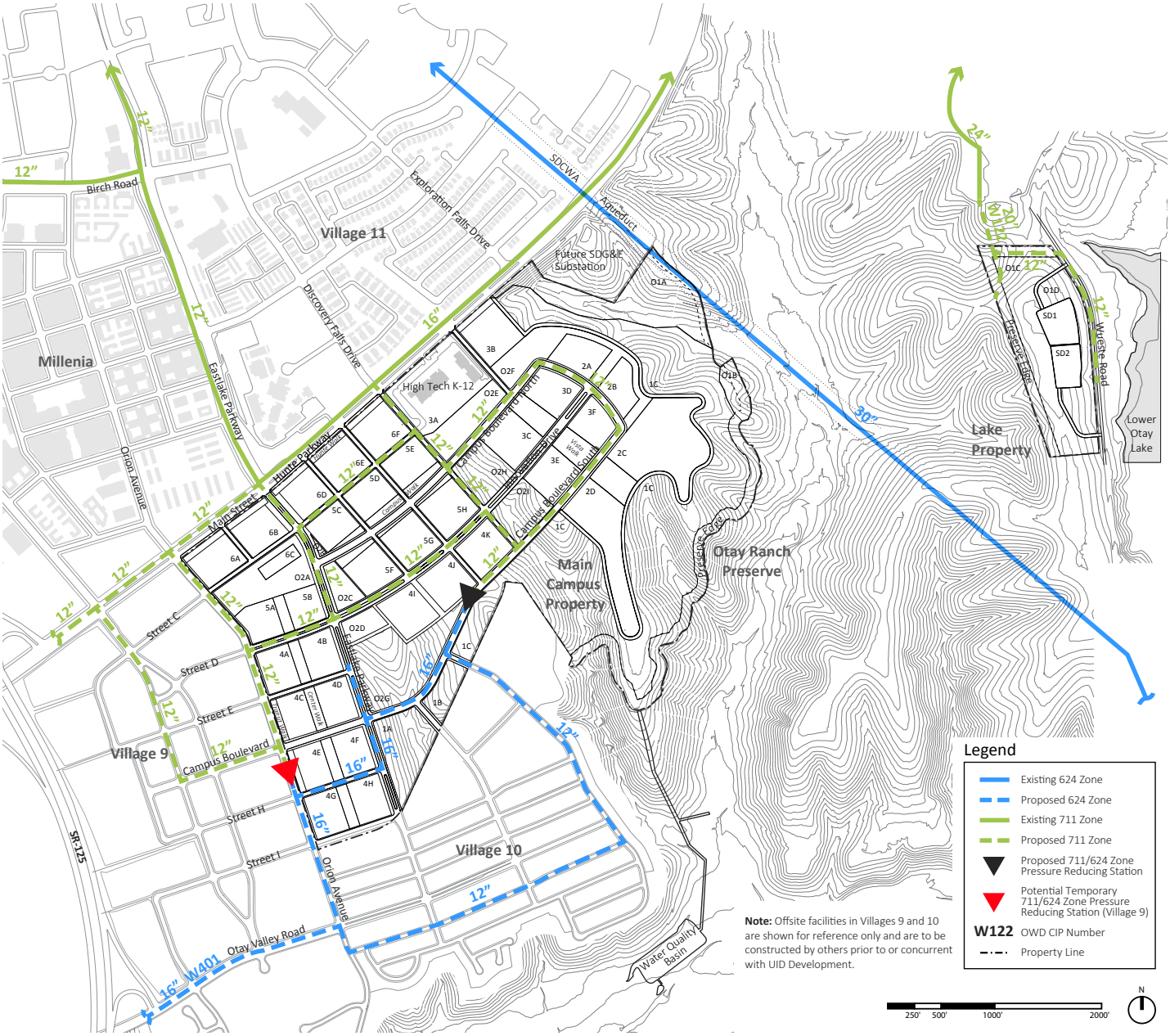


FIGURE 9B: CONCEPTUAL POTABLE WATER PLAN

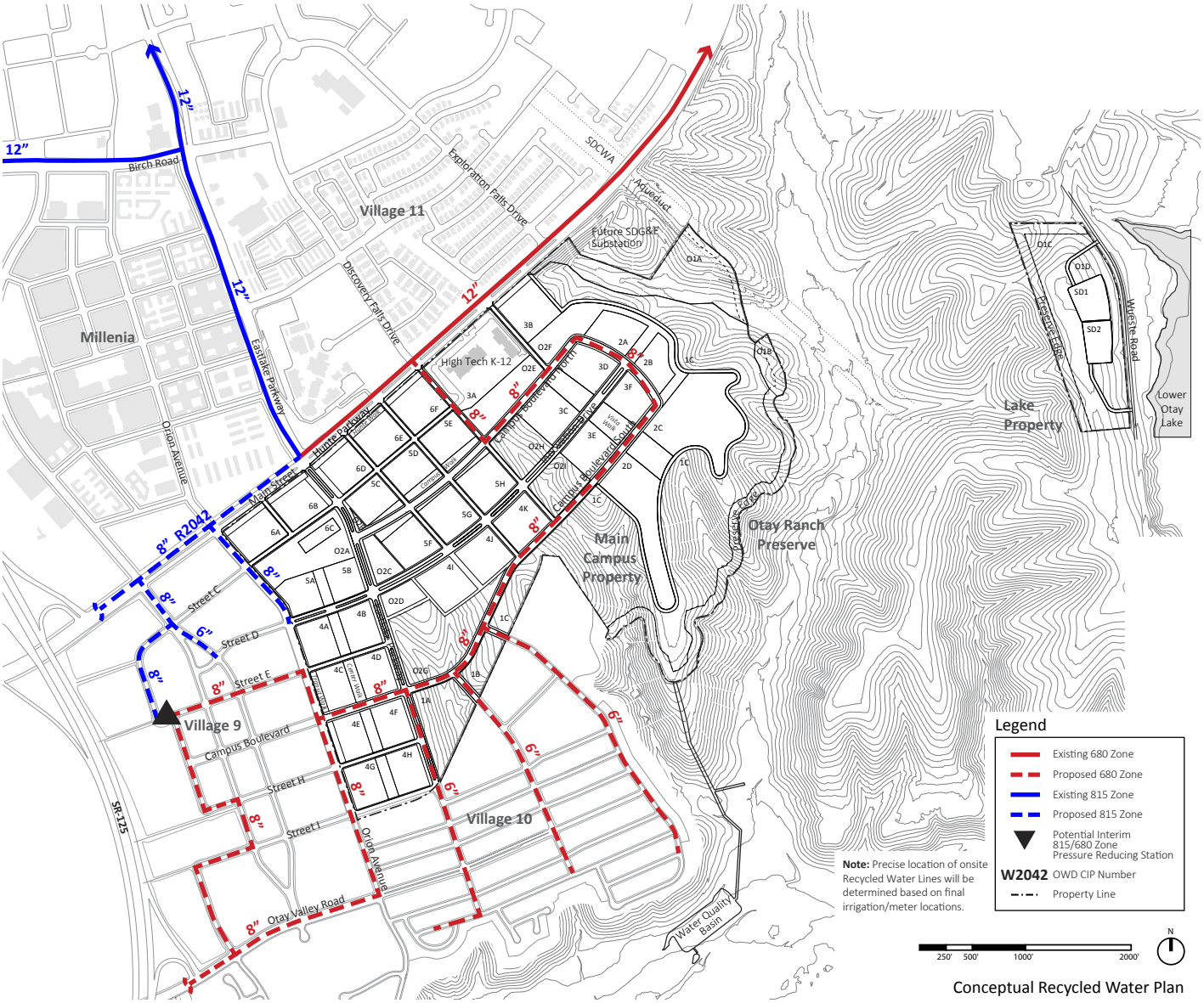
9.2.3. Recycled Water Supply and Master Plan

Current OWD policies regarding new subdivision development require the use of recycled water where available. Consistent with the Otay Ranch GDP, it is anticipated that recycled water will be used to irrigate street parkway landscaping, parks, and common area landscaped areas.

The largest potential recycled water use areas in the UI District includes irrigation of common areas. The development will be served by connecting to the existing line in Hunte Parkway and extending the 680 Zone recycled water system within the property and to the boundaries with Village 9 and Village 10. The primary source of supply for the 680 Zone is the 680-1 Pump Station and the 3.4 MG 680 Zone reservoir that are supplied water from the South Bay Treatment Plant. The development will also extend the 815 Zone in Main Street to the west of Eastlake Parkway. Depending on final site elevations and irrigation locations, a portion of the northwest corner of the site may require service from the 815 Zone. Figure 9C: Conceptual Recycled Water Plan provides the existing and proposed recycled water system in the vicinity of the UI District.

For the Lake Property, there are no existing recycled water lines in the area and recycled water is not proposed to be used for these parcels. Aside from the limited potential for recycled water use on the parcel, the City of San Diego has not historically allowed recycled water to be used within the Otay Reservoir watershed.

Recycled water requirements for the UI District will be coordinated by the Water District and the City. Phased construction of recycled water facilities, based on the approved master plan, will be incorporated into the PFFP and/or subdivision map conditions to assure timely provision of required facilities



Conceptual Recycled Water Plan

FIGURE 9C: CONCEPTUAL RECYCLED WATER PLAN

9.2.4. Water Conservation

A Water Conservation Plan has been prepared as a component of this SPA Plan in conformance with the requirements of the Otay Ranch GDP and the Chula Vista Growth Management.

As described in the Water Plan prepared by Dexter Wilson Engineering Inc., certain landscaped areas are required to utilize recycled water where available based on current OWD policies regarding new subdivision development. Consistent with the Otay Ranch GDP, it is anticipated that recycled water will irrigate landscape areas identified in the Water Plan.

Development within the UI District must comply with all State Water Resource Control Board (SWRCB) and OWD regulations, emergency, or otherwise that are applicable and in effect at the time of building permit issuance. All development will implement interior water conservation project design features. As applicable, the UI District development will follow all SWRCB usage restrictions which include the following prohibitions:

- The application of potable water to outdoor landscapes in a manner that causes run-off such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;
- The application of potable water to driveways and sidewalks;
- The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system;
- The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall;
- The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeteria's, bars, or other public places where food or drink are served and/or purchased;
- The irrigation with potable water of ornamental turf on public street medians; and
- The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.

9.3. Sewer Services

Sewer services and facilities are addressed in detail in the *Sewer Study for University and Innovation District* dated March 17, 2016. Chula Vista operates and maintains its own sanitary sewer collection system that connects to the City of San Diego's Metropolitan Sewer System.

The UI District is located within the Salt Creek sewer basin There are no existing sewer facilities within the UI District except that High Tech K-12 connects into the Hunte Parkway sewer system which flows easterly in Hunte Parkway. Currently Village 9 and Village 10 are not constructed; however they are anticipated to be completed before the UI District. If the UI District is developed before Village 9 and 10, then an additional 2,200 linear feet of 12-inch and 15-inch sewer mainline needs to be constructed to connect into the Salt Creek interceptor sewer. Refer to Figure 9D: Main Campus Property Conceptual Sewer Plan and Figure 9E: Lake Property Conceptual Sewer Plan for the locations of the existing and proposed sewer facilities in the vicinity of the UI District.

9.3.1. Sewage Generation Factors

Commercial land use generation sewage generation factor of 2,500 gallons per day (gpd) per acre was used to project sewage flows on the Main Campus Property. A maximum population of 1,000 persons was used to determine peak usage for the Lake Property. The population-based peaking factor curve in the City of Chula Vista Subdivision Manual (CVDS) 18 was utilized to convert daily flows to peak wet weather flows. The peak daily flow into the Salt Creek basin from the UI District is estimated at 1,220,000 gpd. This flow will be conveyed to the existing Salt Creek Interceptor.

Sewer facilities required to serve the SPA Plan will be constructed in phases. As development of the UI District is refined and the surrounding development's sewer flows are updated, flows in the Salt Creek Interceptor sewer should be further evaluated to determine if any upgraded sections are required. The phasing and financing requirements are addressed in the PFFP and/or subdivision map conditions to assure timely provision of required facilities.

9.3.2. Treatment Capacity

All sewage generated within the City of Chula Vista is currently conveyed to the City of San Diego Metropolitan (Metro) Sewer System for treatment and disposal. The Metro sewer system treats wastewater from the City of San Diego and 15 other municipalities, including the City of Chula Vista. Flows are conveyed to the Point Loma Wastewater Treatment Plant which has a capacity of 240 million gallons per day (mgd) and currently treats approximately 180 mgd. The City of Chula Vista has capacity rights of 20.864 mgd in the Metro sewer system. Current flows in the City average approximately 16.2 mgd. It is anticipated that the UI District's total sewage will be 1.220 mgd and would be within the City of Chula Vista's allowable 20.864 mgd limits. However, it is projected that in the year 2030, City sewage production will be 32.548 mgd which will exceed the City's limit. The sewage generation from the UI District will add to the overall capacity rights for Chula Vista and the time frame of this project will be a factor to when Chula Vista meets its Metro capacity.

9.3.3. Main Campus Property

There are two alternatives for a sewer system for the Main Campus Property. Alternative one—the recommended one—is a gravity based sewer system. The sewer system for the Orange, Yellow and Purple phases would flow to the proposed Village 9 sewer system and then to the Salt Creek Interceptor sewer. A portion of the Village 9 sewer system will have to be up-sized from the recommendations identified in the report titled *Final Overview of Sewer Service for Otay Ranch Village 9*. The Blue and Brown phases will require a separate gravity sewer line that will follow an existing trail to the Salt Creek Interceptor sewer. This connection will be located upstream of Village 9. The elevations of the Blue and Brown phases are lower than the Purple phase and cannot flow into the rest of the main campus sewer system without a pump system. This alternative requires fewer linear feet of sewer pipe and no sewage lift station.

Alternative two uses a sewage lift station to pump the sewer flow to the existing Hunte Parkway sewer system. This system involves adding a pump station with dual systems producing the capacity for approximately 110’ of static head and an additional 4,400 linear feet of 8-inch force main sewer. See Figure 9D: Main Campus Property Conceptual Sewer Plan for the proposed alignments.

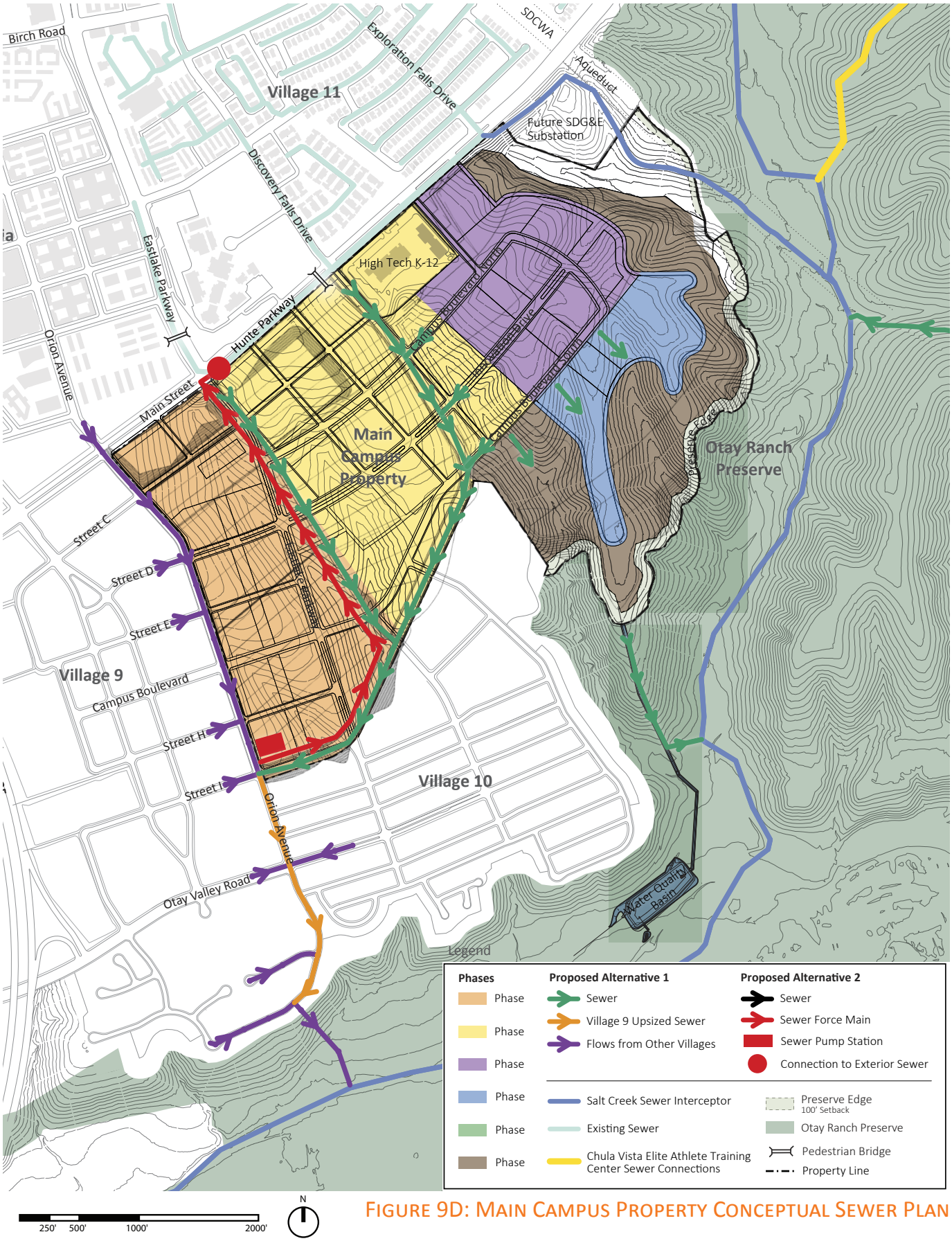


Figure 9D: Main Campus Property Conceptual Sewer Plan

9.3.4. Lake Property

The Lake Property also has two alternatives for a sewer system. The recommended alternative one runs 4,100 linear feet of a gravity sewer line south of the site to the existing open space trail system. The existing trails may also provide access for maintenance. The sewer pipe would then follow the existing trail to the Salt Creek Sewer Interceptor. The terrain in this area provides enough elevation change for a gravity sewer connection, but the surrounding habitat is considered environmentally sensitive area and will potentially lead to construction limitations. Also the sewer line would have to cross a County Water Authority pipeline. See Figure 9E: Lake Property Conceptual Sewer Plan for the proposed alignment.

Alternative two would include a sewage lift station to allow the sewer to go north along one of the existing trails, and connect into the existing Chula Vista Elite Athlete Training Center sewer system. The existing Chula Vista Elite Athlete Training Center sewer then connects to the Salt Creek sewer via a gravity sewer line. The first segment of sewer pipe will need to use a 1% slope to keep the system to a maximum depth of 20 feet deep. The static head for this alternative is approximately 25 feet. This alternative contains 1,400 linear feet of gravity sewer and 700 linear feet of 6-inch force main which is less sewer pipe than the first alternative. See Figure 9E: Lake Property Conceptual Sewer Plan for the proposed alignment.

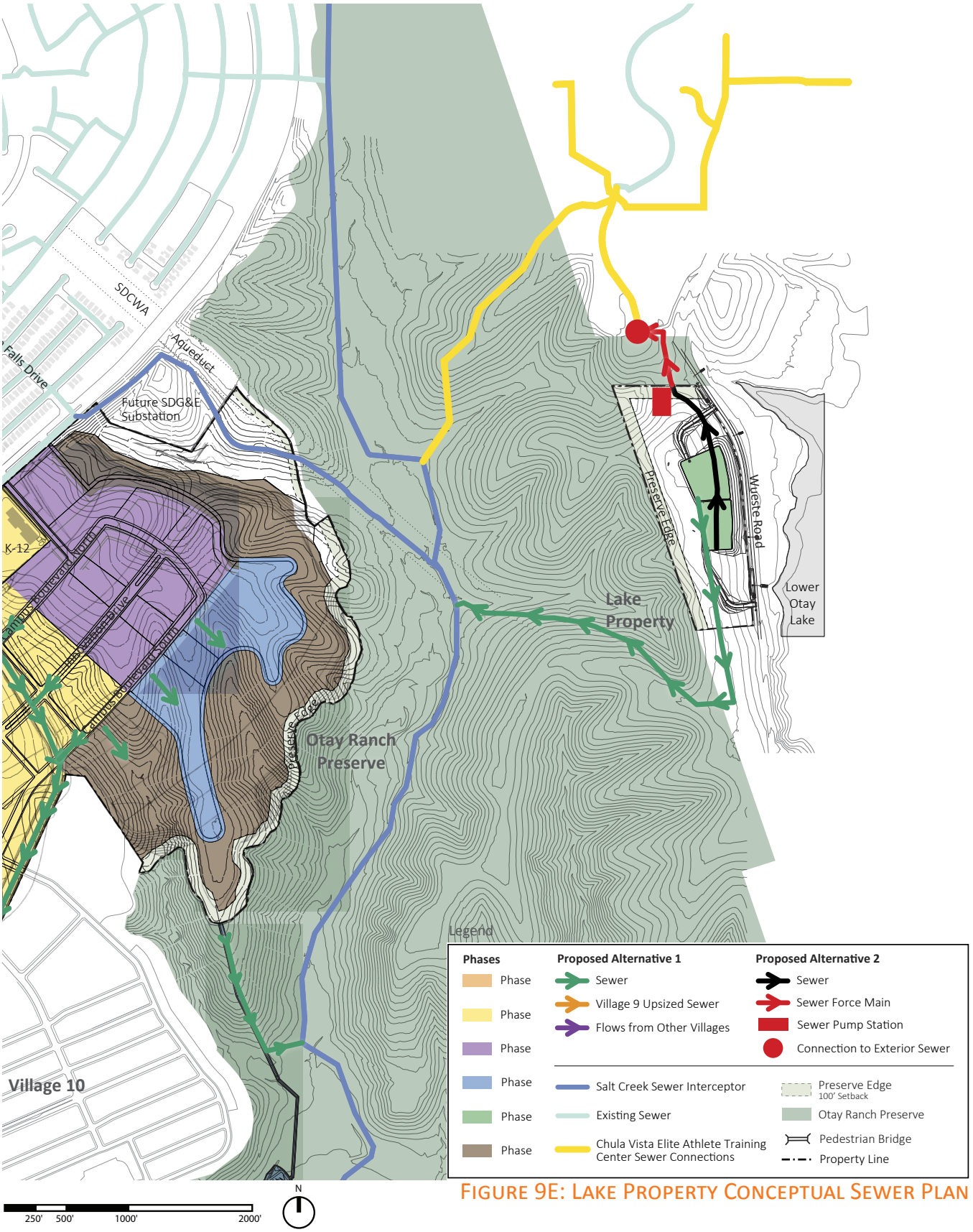


Figure 9E: Lake Property Conceptual Sewer Plan